Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) A system for thermocycling of fluids in cartridges comprising

a) a cartridge with at least one heat conducting wall and at least one light transparent wall, the cartridge having a fluid inlet and a fluid outlet which are connected by a channel, said cartridge having a protrusion into the channel, such that the channel is longer than the shortest distance between the fluid inlet and the fluid outlet to allow bubble-free flow-through filling of the cartridge, wherein the walls of the channel adjacent to the fluid inlet form an angle of 100°-150° with the walls of the fluid inlet and the walls of the channel adjacent to the fluid outlet form an angle of 100°-150° with the walls of the fluid outlet,

b) a thermocycling unit in thermal contact with said heat conducting wall of said cartridge,

c) a light source for transmitting light into the interior of said cartridge through said light transparent wall of said cartridge which is arranged substantially perpendicular to said heat conducting wall,

d) a light detector for detecting light emerging from the interior of the cartridge through said light transparent wall, e) a fluid providing unit coupled to an inlet of the cartridge for providing the cartridge with fluid by flow-through-filling.

2. (previously presented) The system of claim 1, wherein the cartridge has a body comprising the light transparent wall and having at least one opening which is sealed by a foil providing said heat conducting wall.

3. (previously presented) The system of claim 2, wherein the body is a frame which is sealed by two foils providing heat conducting walls.

4. (previously presented) The system of claim 1 for conducting fluorescent measurements wherein the light detector detects fluorescent light emerging from the cartridge.

5. (previously presented) The system of claim 1, wherein the thermocycling unit comprises at least one plate in thermal contact with the heat conducting wall of the cartridge.

6. (previously presented) The system of claim 1, wherein the cartridge is wedge shaped and the thermo cycling unit comprises a wedge shaped receiving section for receiving said wedge shaped cartridge.

7. (previously presented) The system of claim 6, wherein the opposing walls forming the wedge shaped cartridge comprise opposing walls having an angle of 3 to 8° one to another.

8. (previously presented) The system of claim 1, wherein said light transparent wall comprises a first section through which light is passed from the light source into the cartridge and a second section through which light is passed from the interior of the cartridge onto the light detector.

9. (previously presented) The system of claim 8, wherein said first section is tilted with respect to the illumination beam axis so that the light is refracted towards the second section of said transparent wall.

10. (previously presented) The system of claim 1 or 5, wherein said thermocycling unit comprises a plate in thermal contact with said heat conducting wall of the cartridge and which exerts pressure onto said wall.

11. (previously presented) The system of claim 1, wherein the quotient of the maximal width of said channel and the depth of said channel is in the range of 1 to 10.

12. (previously presented) The system of claim 1 or 11, wherein the depth of the channel is in the range of 0.5 to 5 mm.

13. (currently amended) A cartridge for conducting thermal cycling of fluids, comprising

a) a substantially planar and heat conducting wall,

b) a light transparent wall which is disposed substantially vertical to said heat conducting wall,

c) a fluid inlet for providing the cartridge with fluid,

d) a fluid outlet for draining fluid or gas from the cartridge,

e) a channel connecting the fluid inlet and the fluid outlet, wherein said cartridge has a protrusion, into the channel, such that the channel between the fluid inlet and the fluid outlet is longer than the shortest distance between the fluid inlet and the fluid outlet to allow flow-through-filling of the cartridge to avoid bubbles in a measuring section of the cartridge, wherein the walls of the channel adjacent to the fluid inlet form an angle of 100°-150° with the walls of the fluid inlet and the walls of the channel adjacent to the fluid outlet form an angle of 100°-150° with the walls of the fluid outlet.

14. (previously presented) The cartridge of claim 13, having two opposing heat conducting walls.

15. (previously presented) The cartridge of claim 13 or 14, wherein the heat conducting wall is a foil with a thickness of less than 200μm.

16. (previously presented) The cartridge of claim 13 or 14, having two opposing walls from which at least one is a heat conducting wall and which form an angle of 3 to 8° with respect to each other.

17. (previously presented) The cartridge of claim 13, wherein the light transparent wall comprises a first section for transmitting light into the cartridge and a second section for transmitting light emerging from the cartridge.

18. (previously presented) The cartridge of claim 13, which is made from a body having at least one opening which is closed by a heat conducting foil.

19. (previously presented) The cartridge of claim 13, which is made from a frame which is closed by two opposing foils.

20. (previously presented) The cartridge of claim 13 having a thickness of 0.5 to 5 mm.

21. (previously presented) The cartridge of claim 13, wherein the quotient of the maximal width of said channel and the depth of said channel is in the range of 1 to 10.

22. (previously presented) The cartridge of claim 21, wherein the depth of the channel is in the range of 0.5 to 5 mm.

23. (previously presented) A method for thermocycling of fluids employing a system according to claim 1, comprising the steps of filling the cartridge by a flow-through-process avoiding bubbles in a measuring section of the cartridge, thermal cycling of fluid in the cartridge, transmitting light into the cartridge and detecting light emerging the cartridge.

24. (previously presented) The method of claim 23 additionally comprising monitoring the light emerging the cartridge to monitor amplification of nucleic acids in the fluid during thermal cycling.